JUL 20 1925

STATISTICAL BULLETIN
Metropolitan Life Insurance Co.

VOL. VI. JUNE, 1925 No. 6

SUICIDE AND AGE.

Suicide, in the wage-earning group of the American and Canadian populations is approximately two and one-half times as frequent among men as among women. This is shown by what has happened among the more than 16,000,000 Industrial policyholders of the Metropolitan Life Insurance Company.

The above ratio, however, relates to all ages combined. When the suicide data are studied by age periods, it is shown that the ratio of deaths of males to those of females varies greatly at different periods of life, and that the preponderance of self-murder among males increases perceptibly with advancing age.

Suicide does not assume much numerical importance until age 20 is reached. Between 20 and 24, the deathrate for males approximates one and a half times that for females. Between ages 25 and 34, the ratio is a little more than two to one; during each of the next 10-year periods, it is about four to one; at 55 to 64 years, it approximates five to one; and after age 65, there are about seven times as many suicides among men as among women.

One age period, namely, 15 to 19 years, stands out in bold relief from all the rest. This is the only time of life in which suicide is more common among females. In 1923, the suicide rate of young women of these ages insured in the Metropolitan's Industrial Department, was 4.1 per 100,000—or nearly two and one-half times that for males (1.7). It is interesting to note that more than half of the young women who suicided at these ages, used solid or liquid poisons as the means of taking their lives, and that substantially one-quarter died by inhalation of poisonous gas.

At every age period of life up to 45 years, in fact, women suicides used solid or liquid poisons as lethal agents more than any other

method; poisonous gases ranked next. Beginning with age 45, however, and up to age 65, inhalation of gas was the means most used. Among males, on the other hand, shooting is the method most generally employed, and this seems to hold for all of the age periods up to age 65.

The above data relates to white policyholders only. Suicide is much less frequent among colored persons. With negro females, however, the sharply increasing deathrate, with age, which applies to white women, is not in evidence. For colored women insured in the Metropolitan, the deathrate was higher at ages 25 to 34, in 1923, than for any other age group; and the mortality among females exceeded that for males not only at 15 to 19 years, but also at 20 to 24.

ORGANIC HEART DISEASES AND CHRONIC NEPHRITIS ON INCREASE AS TUBERCULOSIS DECLINES.

In the BULLETIN for April, 1925, we showed the changes which had taken place in the relative position of cancer and tuberculosis in life-table populations for the United States Registration Area for 1910 and 1922. The present note will give the facts for organic disease of the heart and chronic nephritis, the two most important cardio-vascular-renal diseases. In 1910, at ages above 10 years males in a life-table population of the United States Registration Area would have recorded 14,676 deaths from organic heart disease; in 1922, this number would have increased to 18,219, an increase of 24.1 per cent. Similarly, among females, the number of deaths recorded would have been 15,288 in 1910 and 18,780 in 1922, with an increase of 22.8 per cent. Chronic nephritis increased 9.9 per cent. for males and 16.5 per cent. for females over this period. A comparison of the findings is shown in the chart on page 3, and in the table on page 4.

Deaths from Organic Heart Diseases and Chronic Nephritis in a Life Table Population

United States Registration Area, 1910 & 1922

Number of Deaths from Organic Diseases of the Heart and Chronic Nephritis in Life-Table Population at and above Age 10. Males and Females, United States Registration Area, 1910 and 1922

Cause of Death	MALES				FEMALES				Age of Maximum Deathrate (After 10)			
	Total Life-Table Deaths in Group of 100,000 Starting Together at Age 10		Increase 1910-1922		Total Life-Table Deaths in Group of 100,000 Starting Together at Age 10		Increase 1910-1922		Male		Female	
	1922	1910	Actual	Percent.	1922	1910	Actual	Percent.	1922	1910	1922	1910
Organic diseases of heart..	18,219	14,676	3,543	24.1	18,780	15,288	3,492	22.8	73	73	77	72
Chronic nephritis.	10,456	9,513	943	9.9	9,862	8,465	1,397	16.5	73	73	75	72

The observed changes in deathrates at specific age divisions give only partial information on the real effect of a given disease or condition on longevity. Some device must be employed to take into account the effect of changes in deathrates for other diseases at various ranges of the life-span. When tuberculosis deathrates, for instance, decline as much as 50 per cent. in a decade at the earlier adult ages, large numbers of persons are transferred to the middle and later ages of the life-span, there to be subjected to the risk of death from other diseases. The net effect of this transfer process, and of changes in the specific deathrates of these other diseases, is shown by calculations which dissect the $^{d}_{x}$ column of the conventional life-table into component causes of death.

Further calculations such as were shown in our December, 1924, BULLETIN lead to measures of the eventual probability of dying from the individual causes of death thus segregated in life-table populations. For cancer, tuberculosis, organic heart diseases and chronic nephritis, the measures of the eventual probability of death at age 10, in the United States Registration Area life-table populations, for the years 1910 and 1922, are shown in the table on next page.

The measure of the probability of eventually dying from *some* cause of death is 1.000,—certainty. The figure .0837 for cancer signifies that males at age 10 had approximately eight chances in a hundred of dying eventually of some form of cancer. Under the mortality rates of 1910, there were six chances in a hundred of eventual death from cancer. Between 1910 and 1922, the *prob-*

ability of a cancer death in the after life-time of males at age 10 had increased 43 per cent. The tuberculosis risk was decreased 34 per cent., that for organic diseases of the heart increased 24 per cent., and for chronic nephritis 10 per cent. We noted for females at age 10 an increase of 23 per cent. for organic heart disease, an increase of 17 per cent. for chronic nephritis, an increase of 15 per cent., for cancer, and a decrease of 29 per cent. for tuberculosis, in the risk of eventual death from these diseases between 1910 and 1922.

Measures At Age 10 of the Probability of Eventual Death from Specific Diseases, United States Registration Area, 1910 and 1922.

Disease	MALES			FEMALES		
	1922	1910	Per Cent. Change 1922–1910	1922	1910	Per Cent. Change 1922–1910
Cancer	.0837	.0587	+42.6	.1132	.0985	+14.9
Tuberculosis	.0684	.1036	—34.0	.0606	.0853	—29.0
Organic diseases of the heart	.1822	.1468	+24.1	.1878	.1529	+22.8
Chronic nephritis	.1046	.0951	+10.0	.0986	.0846	+16.5

Much of the emphasis in this recent life-table analysis of the causes of death is upon the astonishing easement of the risk of death from tuberculosis, a disease of early adult life, and upon the real increase in the hazard of death from diseases characteristic of middle and later life. The social effect of these increases in the risk of eventual death from heart disease, chronic nephritis and cancer could be minimized if the average age at death from these diseases could be postponed to the very late ages, say, beyond 80 or 85 years. But from the chart, and from the first table in this note, it will be seen that for both heart diseases and chronic nephritis the modal age among males has not advanced from age 73 in the last 10-year period. For females, on the other hand, the modal age of death from heart disease advanced from 72 to 77 years and from chronic nephritis, from 72 to 75 years.

CANCERS IN RELATION TO MARRIAGE.

Available statistics on deaths from breast, ovarian and uterine cancers, in relation to marital condition, show that for both ovarian and breast cancers the mortality of single women runs much higher

than for the married. For breast cancer the ratio is nearly three to two and for ovarian cancer it is two to one. Married women, on the other hand, die from uterine cancer at a rate 73 per cent. in excess of that for the unmarried. This suggests that the functions of the uterus in pregnancy tend to increase the liability of malignancy, whereas those of the ovary and breast render these organs less liable to become the seat of cancerous growths. Injury during labor is believed to be an important factor in inducing malignancy of the cervix of the uterus; and this, in itself, would lead us to expect higher mortality among married women from uterine carcinomata. Cancer of the uterus may belong to that group of malignant tumors wherein excessive stimulation is of primary etiological importance, whereas cancers of the ovary and of the breast may be of the group wherein obsolesence tends toward the formation of malignant cell growths. The age distribution of the deaths from these cancers supports such a hypothesis. In 1913 the Registrar-General of England and Wales stated, in substance, that in the case of uterine cancer the difference in mortality between the married and the single is much greater *before* than it is subsequent to age 50, and that the difference practically disappears after age 75. With cancer of the ovary, on the other hand, the excess of mortality among the single is very great after age 35; and with cancer of the breast, after age 45. After these ages the number of deaths is sufficiently large to attach importance to the figures.

The above comparison immediately suggests inquiry into the possible effect of the declining birth rate on the mortality from ovarian, breast and uterine cancers. In America, so far as we are able to judge from figures extending back only a few years, there have been no noticeable effects. The deathrate for ovarian cancers appears to have increased very slightly, it is true, but the rates for breast and uterine growths have remained substantially stationary. In England, the annual report for 1922 of the Chief Medical Officer of the Ministry of Health suggests that a decline in the birth rate has important etiological significance in its effect on the mortality from uterine, ovarian, and breast cancers. In England and Wales, during a period of a declining birth rate, there has been a distinct upward tendency in the mortality from ovarian and breast cancers, accompanied by a practically stationary rate for uterine growths. It is obvious that such data tend to support the thesis that there is a certain relationship between a declining birth rate and an increasing deathrate for ovarian and breast cancers. There appears to be nothing to show, however, that the falling birth rate tends to lower the rate for malignant growths of the uterus.

DECLINE IN THE TYPHOID DEATHRATE IN AMERICAN CITIES, 1900-1923.

In recent years, typhoid fever deathrates have been lowest in the large cities and highest in the small ones. In 1922, the typhoid fever deathrate of cities having a population of one million or more in the Census of 1920, was 2.3 per 100,000. The group of cities with less than 100,000 population had rates between 5 and 6 per 100,000. In 1900, as well, the lowest deathrate was that for the very large cities, but typhoid mortality was as high, or even higher, in places of "500,000 and less than a million" as in cities of any smaller size. These facts are set forth in the following table.

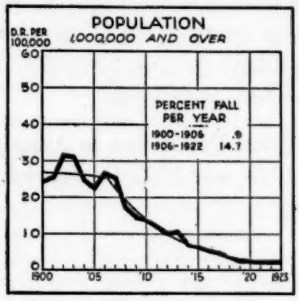
Typhoid Fever Deathrates per 100,000 Population in American Cities,† by Size of City, 1900, 1922, and 1923 Compared.

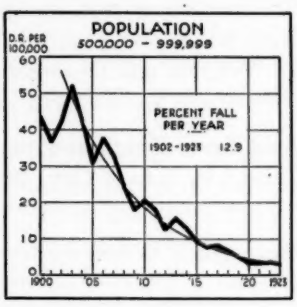
Size of City in 1920	Aggregate Population in 1920	Deathrate in			Rank in	
		1923	1922	1900	1922	1900
Cities of:						
1,000,000 or more	11,223,612	2.3	2.3	24.1	1	1
500,000-999,999	5,274,228	3.1	3.5	43.5	2	5
250,000-499,999	4,573,280	3.5	4.2	38.2	3	2
100,000-249,999	5,543,334	4.5	4.7	38.3	4	3
50,000- 99,999	3,401,045	*	5.7	43.6	6	6
25,000- 49,999	2,652,108	*	5.3	42.6	5	4

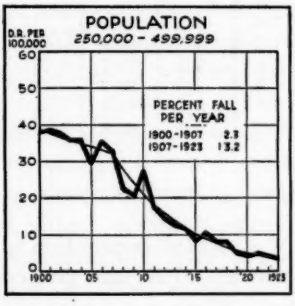
*Data not available.
†Cities in the Registration Area each year since 1900.

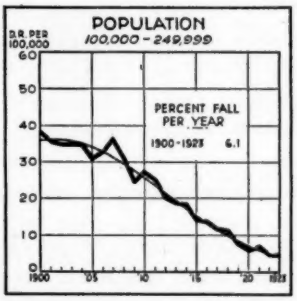
Between 1900 and 1906 in cities of a million population or more, the typhoid fever deathrate decline was less than one per cent. per year. In the period 1906-1922, however, there was a very rapid fall, *i.e.*, 14.7 per cent. per year. In cities with a population of 500,000 and less than a million, the typhoid fever deathrate fell at the rate of 12.9 per cent., per year for the period 1902-1923. A similarly sharp fall was observed for cities of 250,000 and less than 500,000 population; for the period 1907-1923 the typhoid fever deathrate fell 13.2 per cent. per year. These facts and others, relating to the trend of the deathrate are shown in the following chart. It may be concluded that the recent decline in typhoid fever has been most marked in the larger cities, that is, in those of a quarter of a million and over, and in the smaller cities of under 50,000. The decline has been less pronounced in the cities between 50,000 and 250,000 and it is to them that the greatest effort should hereafter be directed in the campaign for the control of this unnecessary disease.

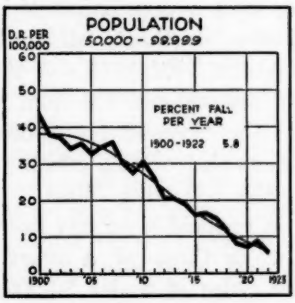
TYPHOID FEVER
IN AMERICAN CITIES
1900 to 1923

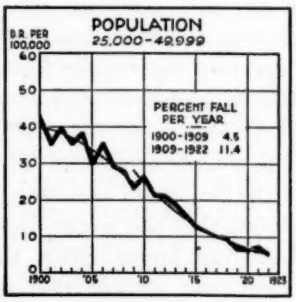












STATISTICAL BUREAU - METROPOLITAN LIFE INSURANCE COMPANY

HEALTH RECORD FOR MAY, 1925.

For the fifth successive month of 1925 the deathrate of the Metropolitan Industrial policyholders showed improvement over the corresponding month of last year. This year's May figure (8.8 per 1,000) is, in fact, the lowest ever recorded for that month save in 1921; and even in that year the calculation must be carried to the second decimal place to show a lower rate. This year's record for May, nevertheless, really marks a new minimum for that month as it is based on an exposure to risk which contains hundreds of thousands of infants whose deathrates are always higher than in any other age group. In 1921 no infants were insured. The usual seasonal decline as compared with April is in evidence.

The table on page 11 shows that a favorable report may be made for all of the more important diseases. The combined rate for the epidemic diseases of childhood continues remarkably low. Mortality from tuberculosis is much lower than ever before recorded for the month of May. The record for the degenerative diseases is altogether favorable. The heart disease deathrate, as in April, shows a reduction as compared with 1924, which is the reverse of the experience for January, February, and March. Even diabetes, which for the majority of the months since midyear of 1924 has been registering increases, recorded declines in May and April. Deaths from maternal diseases fell sharply, both from the April, 1925, figure and from that of May, 1924.

The fatal accident rate, however, rose slightly over last year's May figure and there was again a sharp rise in automobile casualties. The homicide rate for the fifth successive month of 1925 showed an increase over the corresponding period of the preceding year.

The general deathrate for the large cities of the United States during May was 13 per 1,000 which is identical with that for this month a year ago. There was the usual seasonal improvement as compared with April. More cases of influenza, malaria and whooping cough were reported than for May, 1924, but there was less diphtheria measles, scarlet fever and smallpox. Comparison with April, 1925, shows increased prevalence of diphtheria, measles, smallpox, typhoid fever and whooping cough with less influenza, malaria and scarlet fever.

Diphtheria was somewhat more prevalent than in April. The health officer of Rochester, N. Y., was authorized to appoint a special officer to take charge of diphtheria preventive work in that city. In Costilla County, Colorado, there was quite a severe outbreak of both diphtheria and scarlet fever among Mexican residents.

Measles cases were reported in increased numbers from several states, more particularly Arizona and Connecticut. A severe outbreak of scarlet fever occurred in the Bartholomew County Orphan's Home at Columbus, Ind.

Smallpox was slightly more prevalent in May than in April in most of the states for which figures are available. In Wisconsin, 239 cases were reported during the first four weeks of May against 126 during the corresponding weeks of April. In Milwaukee, 367 cases, with 80 deaths, had been reported in 1925, up to June 18. The peak of the outbreak in that city was reached during the week of May 9. The Milwaukee Health Department and private physicians have vaccinated about 450,000 persons during 1925, not including over 200,000 revaccinations. From June 10 to June 18 the only new cases reported were seven from a single unvaccinated family. The determined and successful campaign made by Health Commissioner KOEHLER to get the people vaccinated appears to have checked what promised to develop into a very dangerous, and possibly widespread epidemic. In Nassau County, Long Island, 61 cases were reported in May and vaccination of school children was made compulsory in several towns. There were a number of cases in Bayonne, N. J., and in Sioux City, Iowa, resulting in quite general vaccination of the residents of these cities. In Alliance, Ohio, a death from black smallpox occurred and suspected cases were under observation. The Minnesota State Board of Health reported that from January 1 to May 15 there had been 49 cases with 14 deaths. The New Jersey College for Women at New Brunswick was closed for two days to permit the students to be vaccinated because of smallpox cases in the city. In New York City an emergency appropriation of $80,000 was made to combat the disease.

Among the principal public health activities of the month the following may be mentioned. After a careful study of the smallpox situation in Kentucky by the United States Public Health Service the State Board of Health was advised to inaugurate a campaign for universal vaccination. This recommendation was broadcast by the Board.

The State Board of Health of Oklahoma announced that it was considered necessary for every municipality in the State to pass an ordinance providing that dogs be immunized against rabies. This announcement was deemed necessary because, owing to lack of an appropriation by the Legislature, the State was forced to discontinue its free distribution of the Pasteur treatment.

The table below displays the mortality among the Industrial policyholders for May, 1925, April, 1925, May, 1924, and the year 1924:

METROPOLITAN LIFE INSURANCE COMPANY.

Deathrates* per 100,000 for Principal Causes, Premium-paying Business in Industrial Department. (Annual Basis.)

MONTHS OF APRIL, 1925, MAY, 1925, AND OF MAY, 1924.

CAUSES OF DEATH	RATE PER 100,000 LIVES EXPOSED*			
	May, 1925	Apr., 1925	May, 1924	Year 1924†
TOTAL—ALL CAUSES	884.2	1014.9	957.2	907.5
Typhoid fever	2.0	2.0	2.5	4.4
Measles	5.0	4.5	10.2	7.2
Scarlet fever	4.6	4.8	6.4	4.4
Whooping cough	7.9	8.8	8.0	7.4
Diphtheria	10.4	12.8	9.8	13.2
Influenza	25.0	44.5	18.8	16.0
Tuberculosis (all forms)	102.6	105.4	111.5	104.5
Tuberculosis of resp'y system	87.6	92.3	101.6	92.6
Cancer	65.9	70.0	66.6	70.4
Diabetes mellitus	14.1	16.1	16.3	14.9
Cerebral hemorrhage	49.6	56.6	66.2	60.2
Organic diseases of heart	124.3	138.5	129.9	123.7
Pneumonia (all forms)	94.7	134.0	103.8	88.8
Other respiratory diseases	14.2	16.8	17.0	13.9
Diarrhea and enteritis	19.0	17.5	20.7	32.2
Bright's disease (chronic nephritis)	66.7	76.1	68.4	65.5
Puerperal state	15.4	18.9	17.6	16.8
Suicides	5.3	7.2	8.2	7.2
Homicides	6.7	7.7	5.4	7.1
Other external causes (excluding suicides and homicides)	55.6	57.3	54.3	62.7
Traumatism by automobile	14.1	13.6	11.5	15.7
All other causes	195.1	215.2	215.6	187.0

*All figures include infants insured under one year of age.
†Based on provisional estimate of lives exposed to risk in 1924.

Correspondence on the subjects discussed in these BULLETINS, may be addressed to: The Editor.

STATISTICAL BULLETIN,
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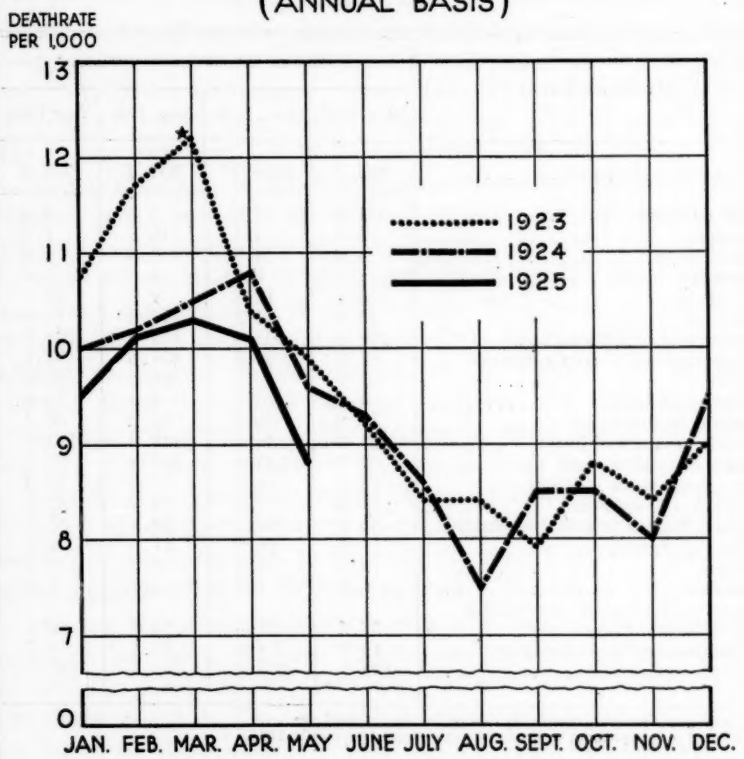
DEATHRATE PER 1000 *in* SPECIFIED MONTHS *of* 1923, 1924, 1925

METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT

(ANNUAL BASIS)



	1923	*1924*	*1925*		*1923*	*1924*	*1925*
JAN.	10.7	10.0	9.5	JULY	8.4	8.6	
FEB.	11.7	10.2	10.1	AUG.	8.4	7.5	
MAR.	12.2	10.5	10.3	SEPT.	7.9	8.5	
APR.	10.4	10.8	10.1	OCT.	8.8	8.5	
MAY	9.9	9.6	8.8	NOV.	8.4	8.0	
JUNE	9.2	9.3		DEC.	9.0	9.5	

★ *Beginning with March, 1923, figures include mortality of infants under one year of age.*

METROPOLITAN LIFE PRESS—77394—PRINTED IN U.S.A.